

ABSTRACT OF THE DISCLOSURE

A method of reducing trench aspect ratio. A trench is formed in a substrate. A conformal Si-rich oxide layer is formed on the surface of the trench by HDPCVD. A conformal first oxide layer is formed on the Si-rich oxide layer by HDPCVD. A conformal second oxide layer is formed on the first oxide layer by LPCVD. Part of the Si-rich oxide layer, the second oxide layer and the first oxide layer are removed by anisotropic etching to form an oxide spacer composed of a remaining Si-rich oxide layer, a remaining second oxide layer and a remaining first oxide layer. The remaining second oxide layer, part of the remaining first oxide layer and part of the Si-rich oxide layer are removed by BOE. Thus, parts of the remaining first and Si-rich oxide layers are formed on the lower surface of the trench, thereby reducing the trench aspect ratio.